What is claimed is :

CLAIMS

1) A method of routing data to a mobile, comprising the steps of:
sending an advertisement message from a foreign agent to a mobile node;
said mobile node receiving said advertisement message; and
sending a request from said mobile node to said foreign agent.

2) The method according to claim 1, further comprising the step of setting a bit in said advertisement message, whereby said foreign agent indicates it supports multicast extension.

3) The method according to claim 1, further comprising the step of appending an identifier to said advertisement message.

4) The method according to claim 1, wherein said request is a registration request, whereby said mobile node has entered a new foreign domain.

5) The method according to claim 1, wherein said request is a multicast request, whereby said mobile node is in said same foreign domain, but has moved to a new foreign agent.

6) The method according to claim 1, further comprising the steps of:
sending a binding update from a home agent to a correspondent, whereby said correspondent is informed of a multicast address of said mobile node;
sending a binding acknowledgement from said correspondent to said home agent; and

sending a source update from said home agent to said mobile node, whereby said mobile node is informed that said correspondent has received said binding update message with said multicast address.

7) The method according to claim 1, further comprising the steps of:
said home agent intercepting packets sent to said mobile node from a correspondent node when said mobile node is visiting a foreign wireless domain;
said home agent tunneling said intercepted packets to said mobile node;
said foreign agent forwarding said packets to said mobile node; and
said mobile node detunneling said intercepted packets.

8) The method according to claim 3, wherein said mobile node analyzes said identifier.

9) The method according to claim 3, wherein said identifier is a network access identifier extension.

10) The method according to claim 4, further comprising the step of said foreign agent performing a validity check.

11) The method according to claim 4, further comprising the step of said mobile node setting a source specific multicast bit in said registration request, whereby said mobile node requests service from a home agent.

12) The method according to claim 4, further comprising the step of said mobile node setting a flag in said registration request, whereby said mobile node requests service from a home agent.

13) The method according to claim 4, further comprising the step of said mobile node setting a bit, whereby said mobile node requests its home agent to not inform correspondents of a current care-of address.

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14) The method according to claim 4, further comprising said foreign agent sending a registration reply to said mobile node.

15) The method according to claim 4, further comprising the steps of:
said foreign agent relaying said registration request to a home agent; and
said home agent appending an address extension to a registration reply.

16) The method according to claim 5, wherein said foreign agent forms a channel by associating a multicast address to each source address found in said multicast request.

17) The method according to claim 5, further comprising the steps of:
said mobile node inserting at least one home agent's address in said multicast request; and
said mobile node providing an address of each correspondent that has received a binding update message from said home agent.

18) The method according to claim 5, further comprising the step of sending a MN-FA authentication from said mobile node to said foreign agent.

19) The method according to claim 6, wherein said home agent sends said binding update in response to receiving a binding request message.

20) The method according to claim 6, wherein said home agent sends said binding update in response to receiving a binding warning message.

21) The method according to claim 6, wherein said binding update sent by said home agent comprises a care-of address set equal to a home address of said mobile node.

22) The method according to claim 7, further comprising the step of using a multicast address to tunnel said intercepted packets.

23) The method according to claim 7, further comprising the step of using a source care-of address to tunnel said intercepted packets.

24) The method according to claim 15, further comprising the step of said home agent inserting a multicast address in said address extension, wherein said address extension is a source specific multicast address extension.

25) The method according to claim 24, further comprising the step of said mobile node receiving the registration reply along with said attached address extension; and

said mobile node subscribing to a channel.

26) The method according to claim 25, further comprising forming said channel by associating a home agent address and said multicast address contained in said address extension, wherein said channel is a source specific multicast address channel.

27) A method of routing data to a mobile, comprising the steps of:
appending a network access identifier extension to an advertisement message;
sending said advertisement message from a foreign agent to a mobile node;
said mobile node receiving said advertisement message;
sending a registration request from said mobile node to said foreign agent;
said foreign agent relaying said registration request to a home agent;
said home agent inserting a multicast address in an address extension;
said home agent appending said address extension to a registration reply;
said mobile node receiving said registration reply along with the attached address extension;
said mobile node forming a channel by associating the home agent address and said multicast address contained in the address extension; and

said mobile node subscribing to said channel.

28) The method according to claim 26, further comprising the steps of:

sending a binding update from a home agent to a correspondent, whereby said correspondent is informed of said multicast address of said mobile node;

sending a binding acknowledgement from said correspondent to said home agent; and

sending a source update from said home agent to said mobile node, whereby said mobile node is informed that said correspondent has received said binding update message with said multicast address, wherein said address extension is a source specific multicast address extension and said channel is a source specific multicast address channel.

29) The method according to claim 26, further comprising the step of using said multicast address to tunnel intercepted packets.

30) The method according to claim 26, further comprising the steps of:
said home agent intercepting packets sent to said mobile node from a correspondent node when said mobile node is visiting a foreign wireless domain;
said home agent tunneling said intercepted packets to said mobile node;
said foreign agent forwarding said packets to said mobile node; and
said mobile node detunneling said intercepted packets.

31) The method according to claim 30, further comprising the step of using said multicast address to tunnel said intercepted packets.

32) A method of updating location in a communication system, comprising the steps of:
sending a binding update from a home agent to a correspondent, whereby said correspondent is informed of a multicast address of said mobile node;

sending a binding acknowledgement from said correspondent to said home agent; and

sending a source update from said home agent to said mobile node, whereby said mobile node is informed that said correspondent has received said binding update with said multicast address.

33) The method according to claim 32, wherein said home agent sends said binding update in response to receiving a binding request message.

34) The method according to claim 32, wherein said home agent sends said binding update in response to receiving a binding warning message.

35) A method of tunneling data in a communication system, comprising the steps of:
a home agent intercepting packets sent to a mobile node from a correspondent node when said mobile node is visiting a foreign wireless domain;
said home agent tunneling said intercepted packets to said mobile node;
a foreign agent forwarding said packets to said mobile node; and
said mobile node detunneling said intercepted packets.

36) The method according to claim 35, further comprising the step of using a multicast address to tunnel said intercepted packets.

37) The method according to claim 35, further comprising the step of using a source care-of address to tunnel said intercepted packets.

38) An apparatus to route data to a mobile, comprising:
    at least one mobile node;
    at least one foreign node operably connected to said at least one mobile node, comprising at least one visitor list; and

a home agent operably connected to said at least one mobile node, comprising a binding list having at least one entry for said at least one mobile node.

39) The apparatus according to claim 38, wherein said entry includes :
said mobile node's multicast address;
an identification field from a registration reply; and
a remaining lifetime of a registration.

40) The apparatus according to claim 38, further comprising at least one tunnel operably connected to said correspondent, whereby said correspondent uses a multicast address to tunnel said intercepted packets.

41) The apparatus according to claim 38, further comprising at least one tunnel operably connected to said home agent, whereby said home agent uses a multicast address to tunnel said intercepted packets.

42) A system to route data to a mobile, comprising:
at least one mobile node having a request message; and
at least one foreign node having an advertisement message, whereby said foreign agent sends said advertisement message to said mobile node and said mobile node sends said request message to said foreign agent.

43) The system according to claim 42, wherein foreign node further comprises an identifier attached to said advertisement message

44) The system according to claim 42, further comprising a home agent, wherein said home agent comprises a registration reply.

45) The system according to claim 42, wherein said request is a registration request, whereby said mobile has entered a new foreign domain.

46) The system according to claim 42, wherein said request is a multicast request, whereby said mobile node is in the same foreign domain, but has moved to a new foreign agent.

47) The system according to claim 44, further comprising:
at least one correspondent having a binding acknowledgement, and
wherein said home agent further comprises a binding update and a source update, whereby said home agent sends said binding update to said correspondent, said home agent sends said source update to said mobile node and said correspondent sends said binding acknowledgement to said home agent.

48) The system according to claim 44, wherein said registration reply further comprises a multicast address extension comprising a source specific multicast address.

49) The system according to claim 47, wherein said correspondent further comprises a binding request message, whereby said home agent sends said binding update message in response to said correspondent sending said binding request message.

50) The system according to claim 47, wherein said mobile node further comprises a binding warning message, whereby said home agent sends said binding update message in response to said mobile node sending said binding warning message.

51) The system according to claim 47, further comprising at least one tunnel operably connected to said correspondent, whereby said correspondent uses a multicast address to tunnel packets.

52) The apparatus according to claim 47, further comprising at least one tunnel operably connected to said home agent, whereby said home agent uses a source care-of address to tunnel packets.

53) The system according to claim 47, further comprising at least one tunnel operably connected to said correspondent, whereby said correspondent uses a multicast address to tunnel packets, wherein said foreign node further comprises an identifier attached to said advertisement message, wherein said request is a multicast request if said mobile node is in the same foreign domain but has moved to a new foreign agent, or wherein said request is a registration request if said mobile has entered a new foreign domain, wherein said registration reply further comprises a multicast address extension comprising a source specific multicast address, wherein said correspondent further comprises a binding request message, whereby said home agent sends said binding update message in response to said correspondent sending said binding request message and wherein said mobile node further comprises a binding warning message, whereby said home agent sends said binding update message in response to said mobile node sending said binding warning message.